

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 05 OCT 2005

WIPO

PCT

Applicant's or agent's file reference ADV1.003.WO	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416																								
International application No. PCT/US04/25221	International filing date (day/month/year) 04 August 2004 (04.08.2004)	Priority date (day/month/year) 04 August 2003 (04.08.2003)																									
International Patent Classification (IPC) or national classification and IPC IPC(7): G02B 6/20; B29C 35/06 and US Cl.: 385/125; 156/244,13																											
Applicant ADVANCED ILLUMINATION TECHNOLOGIES, LLC																											
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows:</p> <div style="margin-left: 40px;"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).  <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.         </div> <p style="margin-left: 20px;">b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																											
<p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 20%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>				<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																									
<input type="checkbox"/>	Box No. II	Priority																									
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																									
<input type="checkbox"/>	Box No. IV	Lack of unity of invention																									
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																									
<input type="checkbox"/>	Box No. VI	Certain documents cited																									
<input type="checkbox"/>	Box No. VII	Certain defects in the international application																									
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																									
Date of submission of the demand 06 June 2005 (06.06.2005)		Date of completion of this report 19 July 2005 (19.07.2005)																									
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer John D. Lee Telephone No. (571) 272-1550																									

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/25221

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))

☐ publication of the international application (under Rule 12.4)

☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1-18 as originally filed/furnished

pages\* NONE received by this Authority on \_\_\_\_\_

pages\* NONE received by this Authority on \_\_\_\_\_

☒ the claims:

pages NONE as originally filed/furnished

pages\* 19-21 as amended (together with any statement) under Article 19

pages\* NONE received by this Authority on \_\_\_\_\_

pages\* NONE received by this Authority on \_\_\_\_\_

☒ the drawings:

pages 1-3 as originally filed/furnished

pages\* NONE received by this Authority on \_\_\_\_\_

pages\* NONE received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

☒ the description, pages NONE

☒ the claims, Nos. NONE

☒ the drawings, sheets/figs NONE

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US04/25221

## Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims <u>1-42</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>1-42</u>	YES
	Claims <u>NONE</u>	NO
Industrial Applicability (IA)	Claims <u>1-42</u>	YES
	Claims <u>NONE</u>	NO

### 2. Citations and Explanations (Rule 70.7)

Claims 1-42 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a light guide of the type claimed which exhibits an aura, wherein the refractive index of the light guide core is lower than the refractive index of the tubular cladding containing the core. The prior art document cited in the Written Opinion (U.S. Re 36,157) does not disclose or suggest such a light guide since the core refractive index therein is greater than the cladding refractive index.

Claims 1-42 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

NEW CITATIONS

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.  
PCT/US04/25221

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

## CLAIMS

## 1. A light-emitting form comprising:

an elongated light guide having a first end and a second end; and

a light source that sheds light into the first end of the light guide;

wherein the light guide further comprises:

a tubular light-transmitting container consisting essentially of a substantially amorphous polymer with a first index of refraction, the container having a first open end, a second open end, an inside surface and an outside surface; and

an elongated light-transmitting core with a second index of refraction lower than said first index of refraction, the core having a first end and a second end, the core being within the container and optically connected to the inside surface thereof;

whereby the light guide exhibits an aura, wherein the outside surface of the container illuminates its surroundings and appears to glow.

2. The light-emitting form of claim 1 further comprising means for sealing the first open end of the light guide and means for sealing the second open end of the light guide, whereby the light guide is adapted to contain a core of liquid.

3. The light-emitting form of claim 2 wherein the core consists essentially of a liquid comprising a salt solution.

4. The light-emitting form of claim 2 wherein the core consists essentially of a liquid comprising an oil.

5. The light-emitting form of claim 2 wherein the core consists essentially of a liquid comprising a water-soluble polymer in solution.

6. The light-emitting form of claim 2 wherein the core consists essentially of a liquid comprising a polyglycol.

7. The light-emitting form of claim 2 wherein the core consists essentially of a liquid comprising a solution of a low molecular weight organic compound in organic solvent.

8. The light-emitting form of claim 2 wherein the core consists essentially of a liquid comprising a solution of a low molecular weight inorganic compound in inorganic solvent.

PCT/US04/25221 . 06062005

9. The light-emitting form of claim 2 wherein the core consists essentially of a liquid comprising an oligomer in solution.
10. The light-emitting form of claim 2 wherein the means for sealing the second end of the light guide comprises a solid wall integral with the container.
11. The light-emitting form of claim 9 wherein the means for sealing the first end of the light guide comprises a light source embedded as a plug in the first end of the container.
12. The light-emitting form of claim 1 wherein the container consists essentially of a solid comprising a cross-linked polymer.
13. The light-emitting form of claim 1 wherein the container consists essentially of a solid comprising a hydrogel.
14. The light-emitting form of claim 1 wherein the container consists essentially of a solid comprising a thermoplastic polymer.
15. The light-emitting form of claim 1 wherein the container consists essentially of a solid comprising a cross-linked polymer.
16. The light-emitting form of claim 1 wherein the container consists essentially of a solid comprising a thermoset polymer.
17. The light-emitting form of claim 1 wherein the container consists essentially of a solid comprising a halogenated hydrocarbon.
18. The light-emitting form of claim 1 wherein the light guide is substantially cylindrical in shape.
19. The light-emitting form of claim 1 wherein the cross section of the inside surface of the container has a shape different from the cross section of the outside surface of the container.
20. The light-emitting form of claim 1 wherein the light source comprises a plurality of light-emitting elements at the first end of the light guide that shed light into the first end of the light guide.

PCT/US04/25221.06062905

21. The light-emitting form of claim 1 further comprising a second light source that sheds light into second end of the light guide.
22. The light-emitting form of claim 1 wherein the light source comprises a light-emitting diode.
23. A light-emitting form comprising:  
a container consisting essentially of a solid tubular element comprising a substantially amorphous acrylic polymer having a first index of refraction, having an inside surface of about 14 mm diameter, an outside surface of about 17 mm diameter, a first end, and a second solid end;  
a core consisting essentially of a liquid comprising poly glycol having a second index of refraction lower than said first index of refraction, the core being within the container and optically connected to the inside surface thereof; and  
a light source consisting essentially of a light-emitting diode, sealingly embedded in the first end of the container and optically connected to the core into which it sheds light,  
whereby the light-emitting form exhibits an aura, wherein the outside surface of the container illuminates its surroundings and appears to glow.
24. A light-emitting form comprising:  
a container consisting essentially of a solid comprising a substantially amorphous polyurethane having a first index of refraction, having an inside surface of about 6.5 mm diameter, an outside surface of about 8 mm diameter, a first solid end, and a second solid end;  
a core consisting essentially of a liquid comprising purified oil having a second index of refraction that is lower than said first index of refraction, the core being within the container and optically connected to the inside surface thereof; and  
a light source comprising a light-emitting diode sealingly embedded in the first end of the container and optically connected to the core into which it sheds light.
25. The light-emitting form of claim 23 wherein the inside surface of the container has a diameter of about 3 mm and the outside surface of the container has a diameter of about 4 mm.
26. The light-emitting form of claim 1 wherein the inside surface of the container has a diameter of about 3 mm and the outside surface of the container has a diameter of about 4 mm.
27. The light-emitting form of claim 1 wherein the inside surface of the container has a diameter of about 6.5 mm and the outside surface of the container has a diameter of about 8 mm.